Certificate no.:
TAA00003UR

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Control and Monitoring System

with type designation(s)
Corvus Gen4 BMS Pack Controller

issued to
Corvus Energy AS
Nesttun, **Norway**

is found to comply with
DNV rules for classification – Ships Pt.6 Ch.5 Sec.21 Cyber security

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.
This type approval covers security capabilities for DNV Cyber security profile level 1 (SP1) and IACS UR E27, subject to conditions stated in this certificate.

Issued at **Høvik** on **2026-04-21**
This Certificate is valid until **2028-04-20**.
DNV local unit: **Mid-North Norway CMC**

Approval Engineer: **Pål Børre Kristoffersen**

for **DNV**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

Corvus Energy's NxtGen Energy Storage System (ESS) products utilize the Gen4 Battery Management System (BMS) and Pack Controller (PC). The Gen4 BMS and Pack Controller is used with the Dolphin NxtGen ESS, the Blue Whale NxtGen ESS, and will be used with other NxtGen ESS systems. The Gen4 BMS PC is wall mounted unit that interfaces to the ship's EMS and to the Battery ESS system's components.

For the product specific information for example, the Dolphin NxtGen ESS, refer to the product specific documentation.

The following table enlists main hardware comprising the system that has been type approved:

No.	*Component Description*	*Manufacturer*	*Type Designation*	*OS/Software*
1	Pack Control Module	Winmate	PCM1, PCM 2	Refer to the approved F071 Inventory list – Document 20017849_C_Cybersecurity Topology and Asset Inventory, G4
2	Lighthouse Computer	Winmate	LAMPS PC	
3	Managed Switch	Siemens	Ethernet Switch	
4	Field Bus Expander	Weidmüller	Field Bus Expander	
5	Stack Interface Base	Corvus Energy	SIB1, …, SIB20	
6	String Disconnect Module	Corvus Energy	SDM1, …, SDM20	
7	Battery Module	Corvus Energy	MCB	

Approval conditions

Product certification requirements in accordance with DNV-RU-SHIP Pt.6 Ch.5 Sec.21 Cyber security:

When the type approved system is delivered to a vessel with class notation Cyber secure (Essential) a Product certificate is required. To acquire the Product certificate, following documents must be submitted:

1. A project-specific system topology (F030) and that this is consistent with type approved document 20017849_C_Cybersecurity Topology and Asset Inventory, G4.
2. A project-specific asset inventory (F071) and that is consistent with type approved document 20017849_C_Cybersecurity Topology and Asset Inventory, G4.
3. A declaration (Z300) or test report (Z261) that confirms configuration and hardening of the system as per the type approved document 20014174_B_Cybersecurity Password Policy and 20000832_K_INTEGRATOR MANUAL, ENERGY, DOLPHIN NxtGen Subchapter 8.6.2. Certification testing of cyber security capabilities is not required if the delivery is fully covered by this TA certificate.

At delivery of the Cyber Security Product Certificate, testing in accordance with DNV RU SHIP Pt.6 Ch.5 Sec.21 is not required for the type-approved system.

If a delivered system differs from the type approved system, this shall be described and submitted for approval.

For newbuilding projects, design documents for identical deliveries to sister vessels with the same DNV project ID shall be submitted for approval in one common document transmittal.

Modifications in the software application of the system should adhere with the modification strategy (Z100) as per the type approved document PRC1308_Rev_4_Software_Development_Process. Major modification must be submitted to DNV for review.

Product certification requirements in accordance with other applicable DNV rules:

Additional Product certification may be required in accordance with applicable DNV requirements e.g. DNV-RU-SHIP Pt.4 Ch.9.

Application/Limitation

The following conditions shall be satisfied when the system is installed and used on a vessel where the class notation Cyber secure (Essential) applies:

- The type approved products shall be installed in restricted areas. Access to the components shall be restricted and controlled.
- The type approved products shall be installed behind a hardware firewall.
- The type approved products shall only be connected to networks or systems explicitly illustrated in the approved system topology and shall not interface with any untrusted networks or systems outside of this scope.

Type Approval documentation

Tests carried out
Tested in accordance with requirements for DNV rules Pt.6 Ch.5 Sec.21 security profile 1, edition July 2024 as per the supplier's F252 document. Relevant manuals and instructions of Corvus Energy's management system have been verified for compliance with DNV-RU-SHIP Pt.6 Ch.5 Sec.21 [3.3].

Marking of product
- Hardware devices shall be marked with product name and type
- Software version(s) can be seen via each product's management interface

Renewal assessment
A renewal assessment will be performed at renewal of the certificate.

The scope of the renewal assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software version, components and/or materials.

The main elements of the assessment are:
- Ensuring that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate
- Review documented evidence of adherence to Secure Development Lifecycle processes.

Manufactured by:
Corvus Energy AS
Sandbrekketoppen 30
5224 Nesttun